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EXAMINER	
STOCK JR, GORDON J	

ART UNIT	PAPER NUMBER
2877	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/924,268	WOLLESCHENSKY ET AL.	
	Examiner	Art Unit	
	Gordon J Stock	2877	

-- The MAILING DATE of this communication app ars on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-90* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-90* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,4*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "step size of the shift is below the raster dimension" of **claim 48**; limitations of claims 58-59 excluding the limitations of base **claim 47**; "a nonlinear distortion of the input signals" of **claim 62**; "integration parameters" of **claim 63**; "the response curve of the amplifier" of **claim 64**; "a color-coded fluorescence image is generated" of **claim 66**; "a superposition of additional images" of **claim 67**; "a comparison of a measured signal with a reference signal via comparators" of **claim 68**; "photon counting" of **claims 72-73**; "an x-y scanner in the illumination source" of **claim 82**; "an x-y scan table" of **claim 83**; "brightfield imaging" of **claims 87 and 90**; "non-scanning" of **claim 90** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. Figures 1a, 1b, 3a-3c, 4a, and 4b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: PMT 1-5; lasers a-d; ef 1-5 of Fig.2; ADC and Phi of Fig. 12. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in

reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: PO of Fig. 2; PH of Fig. 6; PHI of Fig. 7; PHS and PO of Fig. 8; . A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The specification is objected to for the following: on page 3 line 14 it is unclear as to the use of the term '(2)'; on page 4 line 27 the term "(PMT x)" is unclear; on page 8 line 15 the term "AOTF" is not defined; on page 8 line 30 the term PMT in Fig. 6 does not appear in the drawing; on page 11 line 8 the term PHS does not appear in Fig. 7; on page 11 line 19 the PMT does not appear in either Figs. 7 or 8; on page 15 lines 19 and 21 the terms ()Δ are unclear. Corrections are required.

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: in **claim 2**, "the step size in the shift is below the raster dimension of the spatial resolution of the detector" lacks antecedent basis; in **claim 11**, "and/or absorption behavior" and "and/or luminescence and/or phosphorescence and/or enzyme-active light emission and/or enzyme-active fluorescence" lacks antecedent basis; in **claim 12**, "for distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift of the emission spectrum depending on the local environment to which the dye or dyes is or attached

and/or for measuring emission ratio dyes for determining ion concentrations" lacks antecedent basis; in **claim 13** "for distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift of the absorption spectrum depending on the local environment to which the dye or dyes is or attached and/or for measuring the absorption ratio for determining ion concentrations" lacks antecedent basis; in **claim 16**, "influenced by a nonlinear distortion of the input signals" lacks antecedent basis; and in **claim 17**, "wherein the integration parameters are influenced" lacks antecedent basis.

In **claim 18**, "wherein the characteristic or response curve of an amplifier is influenced" lacks antecedent basis; in **claim 21** "wherein a color-coded fluorescence image is generated" lacks antecedent basis; in **claim 22** "wherein a superposition is carried out with additional images" lacks antecedent basis; in **claim 23**, "wherein a comparison of the measured signal with a reference signal is carried out via comparators in detection channels and in case the reference signal is not reached and/or is exceeded a change in the operating mode of the detection channel is carried out" lacks antecedent basis; in **claim 24**, "wherein the respective detection channel is switched off and/or not taken into account" lacks antecedent basis; and in **claim 28** "photon counting is carried out in time correlation" lacks antecedent basis.

In **claim 29** "entangled photons" lacks antecedent basis; in **claim 30** "with parallel illumination and detection, in ingredient screening, wherein the specimen is a microtiter plate" lacks antecedent basis; in **claim 34** "for detection of a single photon and/or multiphoton dye fluorescence in a fluorescence correlated spectroscope" lacks antecedent basis; in **claim 37** "using an X-Y scanner in the illumination means" lacks antecedent basis; in **claim 38** "using an

x-y scan table" lacks antecedent basis; and in **claim 41** "using brightfield imaging" lacks antecedent basis.

In **claim 44** "using brightfield imaging" lacks antecedent basis; in **claim 45** "using nonscanning" and "brightfield imaging" lacks antecedent basis; in **claim 46** "using an x-y scan table" lacks antecedent basis; in **claim 47** "absorbed from the specimen" and "absorbed from the specimen" lacks antecedent basis; in **claim 48** "step size of the shift is below the raster dimension of the spatial resolution of the detector" lacks antecedent basis; and in **claim 57** "the emission behavior and/or absorption behavior, preferably the fluorescence and/or luminescence and/or phosphorescence and/or enzyme-active light emission and/or enzyme-active fluorescence" lacks antecedent basis.

In **claim 58** "distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift of the emission spectrum depending on the local environment to which the dye or dyes is or are attached and/or for measuring emission ratio dyes for determining ion concentrations" lacks antecedent basis; in **claim 59** "for distinguishing different dyes and/or for determining the local dye composition of an image point when a plurality of dyes are used simultaneously and/or for determining the local shift of the absorption spectrum depending on the local environment to which the dye or dyes is or attached and/or for measuring the absorption ratio for determining ion concentrations" lacks antecedent basis; in **claim 62** "influenced by a nonlinear distortion of the input signals" lacks antecedent basis; in **claim 63** "integration parameters are influenced" lacks antecedent basis; in **claim 64** "the characteristic curve or response curve of an amplifier is influenced" lacks antecedent basis; and in **claim 66** "a color-coded fluorescence image is generated" lacks antecedent basis.

In **claim 67** "a superposition is carried out with additional images" lacks antecedent basis; in **claim 68** "a comparison of the measured signal with a reference signal is carried out via comparators in detection channels and in case the reference signal is not reached and/or is exceeded a change in the operating mode of the detection channel is carried out" lacks antecedent basis; in **claim 69** "the respective detection channel is switched off and/or not taken into account" lacks antecedent basis; in **claim 73** "the photon counting is carried out in time correlation" lacks antecedent basis; in **claim 74** "entangled photons" lacks antecedent basis; in **claim 79** "detection of a single-photon and/or multiphoton dye fluorescence in a fluorescence correlated spectroscope" lacks antecedent basis; in **claim 82** "including an x-y scanner in the illumination means" lacks antecedent basis; in **claim 83** "including an x-y scan table" lacks antecedent basis; in **claim 87** "brightfield imaging" lacks antecedent basis; and in **claim 90** "non-scanning" and "brightfield imaging" lacks antecedent basis.

Corrections required.

Claim Objections

7. **Claims 38, 41, 81** objected to under 37 CFR 1.75 as being a substantial duplicate of **claims 46, 44, and 85** respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

8. **Claims 57-59, 74-76, 78-80, 84, 86-90** are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. For these claims the additional

recitation appear to be preambles and/or intended uses which are given no patentable weight; therefore do not further limit the subject matter of the previous claim.

9. **Claim 1** is objected to for the following: the phrase on line 6, "the position," and on line 8 "the signals" lack antecedent basis. Correction is required.

10. **Claim 2** is objected to for the following: "the raster dimension," "the step size," and "the shift" lack antecedent basis. Corrections required.

11. **Claim 5** is objected to for the following: "the dispersive element" lacks antecedent basis. Correction is required.

12. **Claims 6 and 8** are objected to for the following: "the spatially changing effect" lacks antecedent basis. Correction is required.

13. **Claim 10** is objected to for the following: "the spectral resolution" lacks antecedent basis. Correction is required.

14. **Claim 11** is objected to for the following: "the wavelength-dependent behavior," "the emission behavior," and "the fluorescence and/or luminescence" lack antecedent basis. Correction is required.

15. **Claim 12** is objected to for the following: "the local dye composition," "the local shift," "the emission spectrum," and "the local environment" lack antecedent basis. Corrections required.

16. **Claim 13** is objected to for the following: "the local dye composition," "the local shift," "the absorption spectrum," "the absorption ratio," and "the local environment" lack antecedent basis. Corrections required.

17. **Claim 16** is objected to for the following: "the detector channels" and "the input signals" lack antecedent basis. Correction is required.

18. **Claim 17** is objected to for the following: "the integration parameters" lack antecedent basis. Correction is required.

19. **Claim 18** is objected to for the following: "the characteristic or response curve" lacks antecedent basis. Correction is required.

20. **Claim 19** is objected to for the following: "the calculated intermediate values" lacks antecedent basis. Correction is required.

21. **Claim 23** is objected to for the following: "the measured signal," "the operating mode," and "the detection channel" lack antecedent basis. Correction is required.

22. **Claim 24** is objected to for the following: "the respective detection channel" lacks antecedent basis. Correction is required.

23. **Claim 25** is objected to for the following: "the relevant spectral region" lacks antecedent basis. Correction is required.

24. **Claim 26** is objected to for the following: "the signals" just as in claim 1 and "the detection channels" lack antecedent basis. Correction is required.

25. **Claim 27** is objected to for the following: "the signals" just as in claim 1 and "the detection channels" lack antecedent basis. Correction is required.

26. **Claim 28** is objected to for the following: "the photon counting" lacks antecedent basis. Correction is required.

27. **Claim 37** is objected to for the following: "the illumination means" lacks antecedent basis. Correction is required.

28. **Claim 47** is objected to for the following: "the position" of line 9 and "the signals" of line 12 lack antecedent basis. Correction is required.

29. **Claim 48** is objected to for the following: "the step size," "the shift," and "the raster dimension" lack antecedent basis. Correction is required.

30. **Claim 52** is objected to for the following: "the spatially changing effect" lacks antecedent basis. Correction is required.

31. **Claim 54** is objected to for the following: "the spatially changing effect" lacks antecedent basis. Correction is required.

32. **Claim 56** is objected to for the following: "the spectral resolution" lacks antecedent basis. Correction is required.

33. **Claim 57** is objected to for the following: "the wavelength-dependent behavior," "the emission behavior," and "the fluorescence and/or luminescence" lack antecedent basis. Correction is required.

34. **Claim 58** is objected to for the following: "the local dye composition," "the local shift," "the emission spectrum," and "the local environment" lack antecedent basis. Correction is required.

35. **Claim 59** is objected to for the following: see the objections for **claim 13** above.

36. **Claim 62** is objected to for the following: "the signals" just as in claim 47 and "the input signals" lack antecedent basis. Correction is required.

37. **Claim 63** is objected to for the following: "the integration parameters" lacks antecedent basis. Correction is required.

38. **Claim 64** is objected to for the following: "the characteristic or response curve" lacks antecedent basis. Correction is required.

39. **Claim 65** is objected to for the following: "the calculated intermediate values" lacks antecedent basis. Correction is required.

40. **Claim 68** is objected to for the following: "the measured signal," "the operating mode," and "the detection channel" lack antecedent basis. Correction is required.

41. **Claim 69** is objected to for the following: "the respective detection channel" lacks antecedent basis. Correction is required.

42. **Claim 70** is objected to for the following: "the relevant spectral region" lacks antecedent basis. Correction is required.

43. **Claim 71** is objected to for the following: "the detection channels" lacks antecedent basis. Correction is required.

44. **Claim 72** is objected to for the following: "the detection channels" lacks antecedent basis. Correction is required.

45. **Claim 73** is objected to for the following: "the photon counting" lacks antecedent basis. Correction is required.

46. **Claim 82** is objected to for the following: "the illumination source" lacks antecedent basis. Correction is required.

Claim Rejections - 35 USC § 112

47. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

48. **Claims 1-90** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

49. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

50. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, **claims 11 and 57** recite the broad recitation "for optical detection of characteristic quantities of the wavelength-dependent behavior of an illuminated specimen," and the claims also recite "particularly the emission behavior" and "preferably the fluorescence" which are narrower statements of the range/limitation.

51. **Claims 11-13, 29, 30, 31, 33-35** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: for **claim 11** step(s) for optical detection of characteristic quantities ... fluorescence; for **claim 12** step(s) for distinguishing different dyes ... concentrations; for **claim 13** step(s) for distinguishing different dyes ... ion determinations; for **claim 29** step(s) for detection of single-photon ...photons; for **claim 30** step(s) for parallel

illumination and detection in ingredient screening; for **claim 31** step(s) for linewise detection; for **claim 33** step(s) for detection in a nearfield scanning microscope; for **claim 34** step(s) for detection of a single photon ... spectroscope; and for **claim 35** step(s) for confocal detection.

52. As for **claims 25 and 70**, the phrase, "narrowed in this way," is indefinite, for it is unclear as to how a spectral region is narrowed, for the method is "a method of optical detection of characteristic quantities of an illuminated specimen" comprising no narrowing steps and the arrangement is "an arrangement for optical detection of characteristic quantities of an illuminated specimen" comprising no narrowing means which "this way" refers. Clarification required.

53. **Claim 32** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the steps that effectively incorporate a microscope into the method of **claim 1**.

Claim Rejections - 35 USC § 102

54. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

55. **Claims 1-3, 11, 15-17, 19, 22, 36, 47-49, 57-59, 61-63, 65, 67, 74-76, 78-80, and 84-90** are rejected under 35 U.S.C. 102(a) as being anticipated by **Gregory (6,240,219)**.

As for **claims 1-3, 36, 47-49, 57-59, 74-76, 78-80, 84-90** Gregory in an apparatus and method for providing optical sensors with super resolution discloses the following: detecting a signal that is backscattered, reflected and/or fluoresced and/or transmitted from a specimen by a spatially resolving detector wherein radiation from a specimen is imaged on detector whereas, the signal that is backscattered, reflected, fluoresced, or transmitted is suggestive of the examples of sensors mentioned (col. 1, lines 15-20); shifting position of radiation in a spatially resolved manner relative to the detector (col. 2, lines 33-65; col. 4, lines 30-40; col. 5, lines 45-65); determining intermediate values by an algorithm from signals to increase resolution (algorithms and processing on cols. 7-10); the step size is below raster dimension suggestive of subpixel resolution and scanning (col. 2, lines 35-50); a displacement of the detector is carried out (col. 4, lines 33-36); in a scanning arrangement (col. 4, lines 33-35).

As for **claims 11 and 57**, the optical sensors exemplified may detect wavelength dependent behavior such as uv and ir bands (col. 1, lines 15-20).

As for **claims 15-17 and 61-63**, a processor is used for dealing with image data (Fig. 1; 16); nonlinear distortion of signals appear through fast fourier transform (equation 3) and integration parameters are influenced suggested by data influenced by summation formulae (equations 2, 6, 7).

As for **claims 19 and 65**, the algorithm produces an image (cols. 7-10).

As for **claims 22 and 67**, a superposition of images occurs (col. 5, lines 40-50).

56. **Claims 1-3, 11, 15, 17, 19, 22, 36, 38, 47-49, 57-59, 61, 63, 65, 67, 74-76, 78-80, and 83-90** are rejected under 35 U.S.C. 102(e) as being anticipated by **Howell (6,570,613)**.

As for **claims 1-3, 47-49, 57-59, 74-76, 78-80, 84, 86-90,** Howell in a resolution-enhancement method for digital imaging discloses: detecting a reflected signal from a

transparency or print (col. 1, lines 15-20) by a spatially resolving detector wherein radiation coming from specimen is imaged on detector; determining values from an algorithm for increasing spatial resolution; wherein step size in shift is subpixel; and a displacement of the detector occurs (Figs. 10-19; col. 7, lines 50-67; col. 8, lines 1-15).

As for **claims 11 and 57**, optical detection of wavelength dependent behavior is performed (col. 7, lines 1-15).

As for **claims 15 and 61**, a computer is used to prepare image reconstruction computations (col. 7, lines 20-25).

As for **claims 17, 19, 63, and 65**, integral parameters are suggested to be influenced for the processing involves summations of data (Figs. 18-19); intermediate values are used for generating an image (Figs. 16-19).

As for claims **22, 36, 38, 67 and 83 and 85** a superposition is carried out (Fig. 10); there is a scanning arrangement (col. 6, lines 45-50); there is an x-y scan table (col. 7, lines 5-7); wherein values are used to generate images (Figs. 16-19).

Claim Rejections - 35 USC § 103

57. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

58. **Claims 1, 3, 4, 5, 7-9, 11-22, 24,25, 28-36, 38-47, 49, 50, 51, 53-55, 57-67, 69, 70, 73-81, 83-90** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Garner et al. (6,337,472)** in view of **Cabib et al. (5,936,731)**.

As to **claims 1, 3, 47, and 49,** Garner in a light imaging microscope having spatially resolved images detecting a signal that is backscattered, reflected, and/or fluoresced by a spatially resolving detector wherein the radiation is imaged on the detector; shifting the position of the radiation which is measured in a spatially resolved manner relative to the detector suggested through scanning (col. 5, lines 60-65; col. 6, lines 1-25). As for determining intermediate values by an algorithm from the signals for purposes of increasing spatial resolution, Garner mentions improvement of spatial resolution (col. 6, lines 20-25) and that a image cube is produced (col. 11, lines 1-15) and states that resolution can be controlled (col. 19, lines 58-68) and that standard algorithms are performed (col. 5, lines 60-61). Cabib in a method for simultaneous detection of multiple fluorophores teaches the signal to noise is increased and thus resolution is improved effected by production of a spectral cube of data using a mathematical algorithm (suggested by col. 14, lines 10-20; algorithms of cols. 18, 20, and 21). Therefore, it would be obvious to one skilled in the art that spatial resolution would be improved for an image cube is produced that is constructed from mathematical algorithms. Also Garner discloses a displacement of a mirror for scanning (col. 6, lines 30-45).

As to **claims 4 and 50**, Garner discloses a dispersive element in front of a detector (col. 10, lines 15-25).

As to **claims 5 and 51**, Garner suggests the grating is swivelable (col. 19, lines 5-20).

As to **claims 7-9, and 53-55**, Garner discloses a displacement may be carried out by a mirror by sliding a mirror or that the scan unit (col. 6, lines 29-35). As for switching, Garner has an imaging spectrograph slit (col. 6, lines 15-20). Cabib states a switching of the scan unit and the slit for 2-dimensional scanning (col. 13, lines 65-67; col. 14, lines 1-5). Therefore, it

would be obvious that switching between the dispersive element and scan unit occurs, for switching occurs for two-dimensional scanning with an imaging spectrograph slit.

As for **claims 11-14, 57-60,** Garner discloses detection of fluorescence of multiple dyes and emission behavior of specimens and absorption behavior (col. 5, lines 10-60; col. 7, lines 1-45). And a dispersive element is used (col. 19, lines 5-20).

As for **claims 15-17, 19, and 61-63, 65** Garner discloses a computer (col. 10, lines 55-58). As for integration parameters being influenced Cabib demonstrates summation formulae being used in the algorithms and a nonlinear distortion may exist in the algorithm and these values generate an image (cols. 20-21). Therefore, it would be obvious to one skilled in the art that integration parameters and nonlinear distortion would occur in data for summations and nonlinear algorithms are used in manipulating data.

As to **claim 18 and 64**, Garner discloses that the gain setting changes amplifier characteristic (col. 20, lines 8-11).

As for **claim 20, 25, 70**, Garner does not refer to refining curves, but Cabib discloses apparent smoothing and normalization of spectral curves derived from the algorithms (Figs. 6c 7a, 7b). Therefore, it would be obvious that values produced would refine curves, for spectral curves are smoothed by algorithms and the algorithms increase signal to noise.

As for **claims 21, 22, 66 and 67**, Garner discloses a superposition of images and color-coding may be done (col. 17, lines 5-45).

As for **claims 24 and 69**, Garner discloses a channel may be switched off (col. 15, lines 59-65)

As for **claims 28 and 73**, Garner discloses that images are taken in time correlation (col. 21, lines 19-25; col. 3, lines 15-25).

As for **claims 29, 34, 74, and 79** Garner discloses either single photon or multiphoton fluorescence is detected (col. 5, lines 10-40).

As for **claims 30 and 75**, Garner discloses that the specimen is a microtiter plate (col. 6, lines 64-66).

As for **claims 31 and 76**, Garner discloses that there is linewise detection (col. 10, lines 10-40).

As for **claims 32, 33, 77, 78,** Garner discloses the system comprises a nearfield scanning microscope (Fig. 1).

As for **claims 35, 36, 39-45, 80, 81, 84-90,** Garner discloses many types of detection schemes and possible imaging schemes by stating the use of slits and mirrors to transmit an image to the imaging spectrographic slit (col. 6, lines 5-45); Fig. 1 suggests brightfield imaging and point imaging may be used (col. 21, lines 15-25).

As for **claims 38, 46, and 83,** Garner suggests an x-y scan table for two dimensional scanning may be performed (col. 14, lines 48-55; col. 15, lines 20-30).

Allowable Subject Matter

59. **Claims 6, 10, 23, 26, 27, 37, 52, 56, 68, 71, 72, and 82** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and written to overcome any objections or rejections under 35 U.S.C. 112 second paragraph as stated above.

As to **claim 6**, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method of optical detection "a spatially changing effect of swiveling in an axis is carried out by a scan unit and/or by displacement of the detector," in combination with the rest of the limitations of **claim 6.**

As to **claim 10**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical detection method a dispersive element is swiveled for increasing the spectral resolution and further an additional movement of the detector is carried out, in combination with the rest of the limitations of **claim 10.**

As to **claim 23**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical method the particular comparison of the measured signal with a reference signal, in combination with the rest of the limitations of **claim 23.**

As to **claim 26**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical detection method the signals of the detection channels are generated by at least one integrator circuit, in combination with the rest of the limitations of **claim 26.**

As to **claim 27**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical detection method the signals are generated by photon counting and subsequent digital-to-analog conversion is performed, in combination with the rest of the limitations of **claim 27.**

As to **claim 37**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical detection method using an x-y scanner in the illumination means, in combination with the rest of the limitations of **claim 37.**

As to **claim 52**, the prior art of record, taken alone or in combination, fails to disclose or render obvious an arrangement a dispersive element remaining stationary in at least one of its swiveling axes, the spatially changing effect of the swiveling in this axis is carried out by a scan unit, in combination with the rest of the limitations of **claim 52.**

As to **claim 56**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an arrangement a dispersive element is swiveled for increasing the spectral

resolution and an additional movement of the detector is carried out, in combination with the rest of the limitations of **claim 56.**

As to **claim 68**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an arrangement the particular comparison of the measured signal with a reference signal, in combination with the rest of the limitations of **claim 68.**

As to **claim 71**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an arrangement signals are generated by at least one integrator circuit, in combination with the rest of the limitations of **claim 71.**

As to **claim 72**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an arrangement signals are generated by photon counting and subsequent digital to analog conversion is performed, in combination with the rest of the limitations of **claim 72.**

As to **claim 82**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an arrangement an x-y scanner in the illumination source, in combination with the rest of the limitations of **claim 82.**

Information Disclosure Statement

60. The information disclosure statements received April 1, 2002 and June 7, 2002 have been considered. See attached. The reference C5 of June 7, 2002 was not considered for the lack of authorship; the article(s) from Plenum Press of April 1, 2002 was not considered for it comprises two articles comprising two sets of differing authorship.

Conclusion

61. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 4,009,388 to Seachman

U.S. Patent 4,633,317 to Uwira et al.

U.S. Patent 4,656,517 to Shida et al.

U.S. Patent 4,998,164 to Endo et al.

U.S. Patent 5,381,224 to Dixon et al.

U.S. Patent 5,493,593 to Müller et al.

U.S. Patent 5,565,914 to Motta

U.S. Patent 5,712,685 to Dumas

U.S. Patent 5,767,987 to Wolff et al.

U.S. Patent 5,886,784 to Engelhardt

U.S. Patent 5,956,355 to Swanson et al.

U.S. Patent 6,160,618 to Garner

U.S. Patent 6,344,893 to Mendlovic et al.

U.S. Patent 6,466,618 to Messing et al.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: **(703) 872-9306**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gs
November 30, 2003

Zandra V. Smith
Primary Examiner
Art Unit 2877